



A NIDUS PORTFOLIO COMPANY



NIDUS™

Turning Cheap Biomass into Valuable Products

2015 Industry Growth Forum

Denver, CO

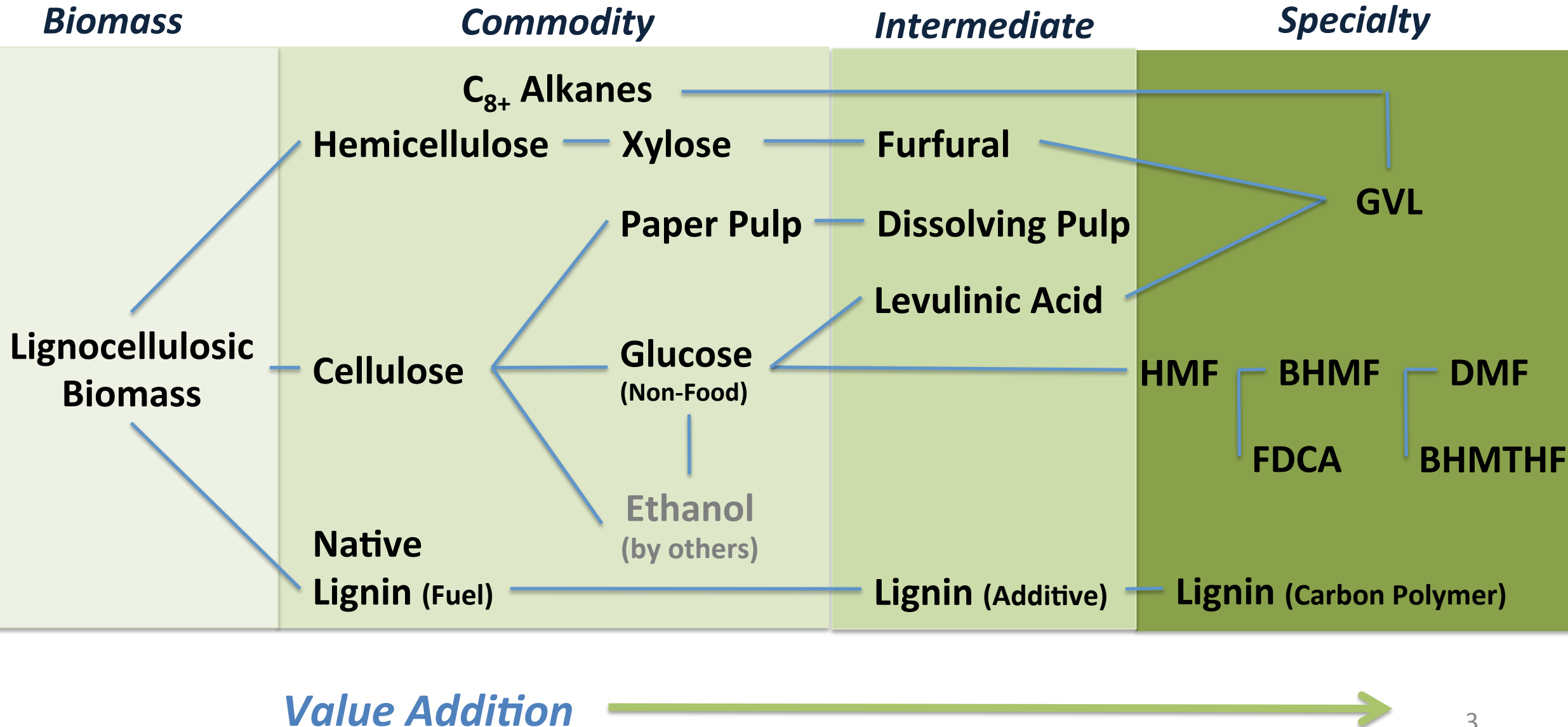
November 4, 2015

Biomass – Problem in Need of a Solution

Aggregated, Plentiful, and Geographically Dispersed



Renewable Chemicals – Demand in Need of a Supply



Beachhead Product Markets

Cellulose from low-value Biomass

Glucose to HMF Derivative Markets

Renewable Products & Chemical Industry

Cellulose from Wood

Dissolving Pulp Market



Hemicellulose

North American Furfural Market



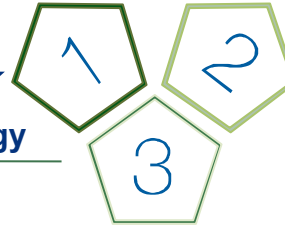
Lignin

Fuel/Carbon Polymers/Aromatics

Automotive and Biofuel Industry

Triversa Process™ Hat Trick

Proprietary Technology

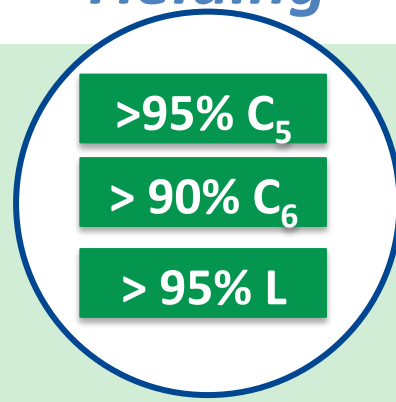


Diverse



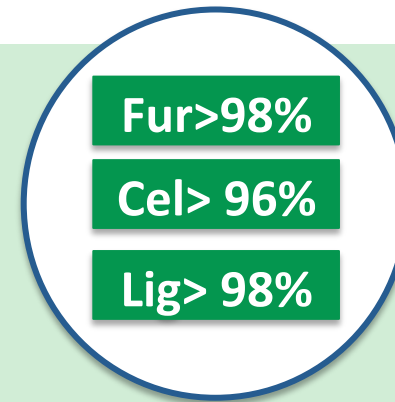
**High
Biomass
Loading**

High Yielding



**Simultaneous
Deconstruction
and Refinement**

Pure



**High Product
Purity**

Revenue Hat Trick



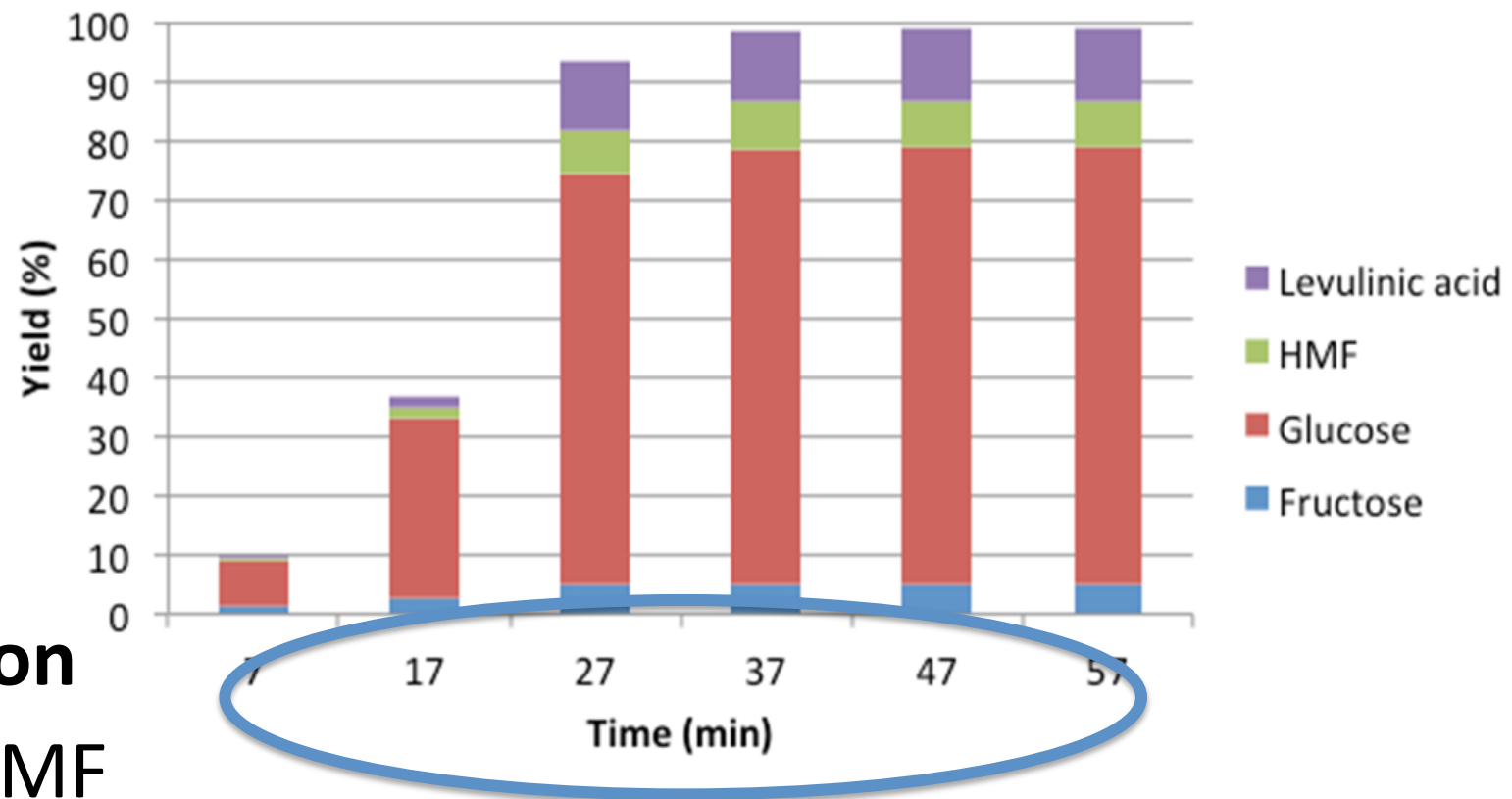
**Three Product
Co-Production
=
Cost Disruption**

No Enzymes or Microbes

Minutes versus Days

Cellulose to Glucose Example

- **Fast hydrolysis**
- **No enzymes**
- **>75% Glucose Yield**
- **> 90% Carbon Utilization**
 - Levulinic Acid and HMF used to produce GVL



What's different?

- Environmentally Friendly, Non-reactive, Solvent-based Technology
- Biomass Flexibility
- Hat Trick Co-Production
- Commercial Facility Capital Requirements (*\$50M vs. \$150M+*)

Intellectual Property Protection

- 5 Patents Licensed from Wisconsin Alumni Research Foundation
- 1 Joint Patent
- 4 GlucanBio Provisional Patents

Biomass Conversion Alternatives



Method	Biomass Flexible	Biomass Fractionation	Post-Rxn Product Concentration	Product Flexibility	# Products
GlucanBio	Yes	Yes	High	High	3
Aqueous Hyd -Enzymatic -Supercritical	No	Partial	Low	Low	1
	Yes	Yes	Low	Low	2
Organosolv	Yes	Partial	Low	Low	2
Pyrolysis	Yes	No	High	Low	1
Gasification	Yes	No	Low	High	1

Competitive Landscape Fundraising



\$75M Series D – Total Petroleum



\$62M purchase by Stora Enso



>\$20M Raised



\$26M Project With Cascade



**Private - \$110M non-binding
letter with Rayonier**

Commercialization – Business Model

Selling Plants - Connecting Biomass to Renewable Products

GlucanBio Business Model

Plant Partnerships

- Owner financed plants
- Plant ownership in exchange for technology
- De-risking in Progress - ~30%+ Returns

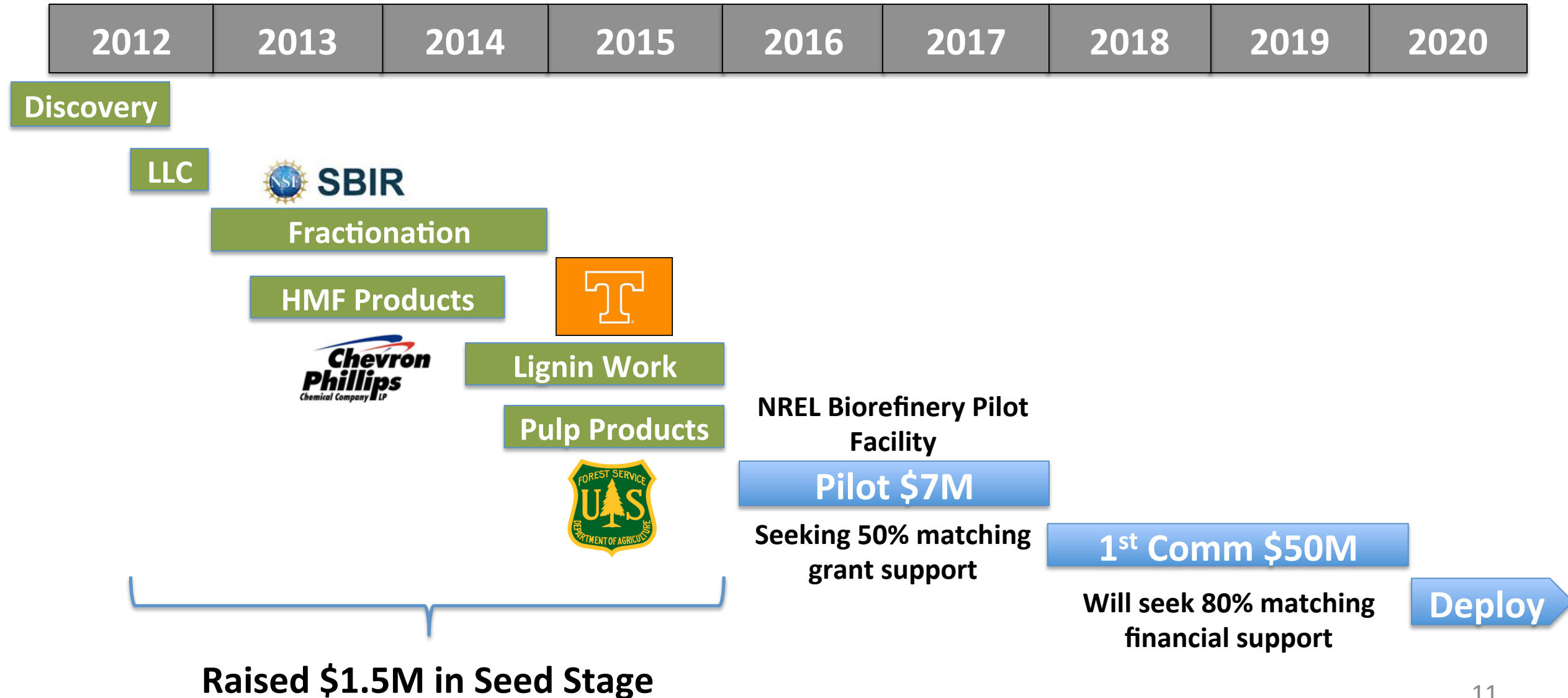
Comparable Business Model

Biomass Cogeneration

- Owner financed plants
- 2,700 plants worldwide with 7% CAGR
- De-risking Complete – ~8% Returns



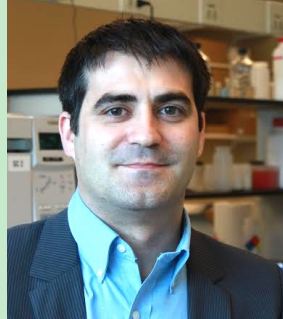
Development Road Map



Experienced Implementation Team



Larry Clarke
CEO



David Alonso, Ph.D
Director R&D



Jeff Fornero, Ph.D
VP Engineering



Sikander Hakim, Ph.D
Engineer R&D



James Dumesic,
Ph.D Founder,



Brent Shanks, Ph.D
Founder, Director,
CBIRC,



Duke Leahey, Ph.D
IP & Licensing

- ***170 years of commercialization experience***
- ***630 scientific publications with 29,000 citations***
- ***Early stage engineering scale-up and IP management experience***



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NIDUS™

Winner Sofinnova Partners Renewable Chemistry Start-up Award

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